

Terminal Learning Objective

ACTION: Implement total fitness program in a company.

CONDITION: Given FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

STANDARD: Implement a total fitness program in a company IAW FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

Enabling Learning Objective (ELO) A

ACTION: Define physical fitness.

**CONDITION: Given FM 21-20, AR 350-41,
Chapter 9 and AR 600-9.**

**STANDARD: Define physical fitness IAW
FM 21-20, AR 350-41, Chapter 9 and AR
600-9.**

Physical Fitness

The ability to function effectively in physical work, training and other activities and still have enough energy left over to handle any emergencies which may arise.

Physical Fitness (Functional Definition)

The ability of the body to meet present and future physical demands.

ELO B

ACTION: Describe the components of fitness.

CONDITION: Given FM 21-20, AR 350-41 Chapter 9 and AR 600-9.

STANDARD: Describe the components of fitness IAW FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

Components of Fitness

- **Cardiorespiratory Endurance**
- **Muscular Strength**
- **Muscular Endurance**
- **Flexibility**
- **Body Composition**

Cardiorespiratory (CR) Endurance

The efficiency with which the body delivers oxygen and nutrients needed for muscular activity and transports waste products from the cells.

Muscular Strength_(MS)

**The greatest amount of force
that a muscle or muscle
groups can exert in a single
effort.**

Muscular Endurance_(ME)

The ability of a muscle or muscle group to perform repeated movements with a sub-maximal force for extended periods of time.

Flexibility (FLEX)

The ability to move joints or any group of joints through an entire, normal range of motion.

Body Composition (BC)

**The amount of body fat the
soldier has in comparison to
his/her total body mass.**

Motor Efficiency

Combat
Readiness

Motor
Efficiency

Physical
Fitness

Proper training to enhance the five components previously mentioned will lead to a higher level of physical fitness. The key element that bridges the gap between physical fitness and readiness is motor efficiency.

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Motor Efficiency

**The quality of movement
performed by the body
through space.**

Motor Efficiency Development

- Coordination
- Kinesthetic Awareness
- Speed
- Agility
- Skill
- Balance
- Power
- Posture

ELO C

ACTION: Describe the principles of exercise.

CONDITION: Given FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

STANDARD: Describe the principles of exercise IAW FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

Principles of Exercise

- Progression
- Regularity
- Overload
- Variety
- Recovery
- Balance
- Specificity

FITT Factors

- **Frequency**
- **Intensity**
- **Time**
- **Type**

FITT Factors Applied to Physical Conditioning

CRE

MS

ME

F 3 - 5 times Weekly

I	70-90% MHR	TMF -Temporary Muscle Failure ME- 12+ reps, MSE-8-12 reps, MS- 3-7
T	20+ min.	Based on Sets and Reps
T	Running Cycling Rowing Road Marching Swimming	Free Weights Machines Free Weights Machines Calisthenics Grass Drills Rifle PT

ELO D

ACTION: Describe the phases of conditioning.

CONDITION: Given FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

STANDARD: Describe the phases of conditioning IAW FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

Phases of Conditioning

- Preparatory
- Conditioning
- Maintenance

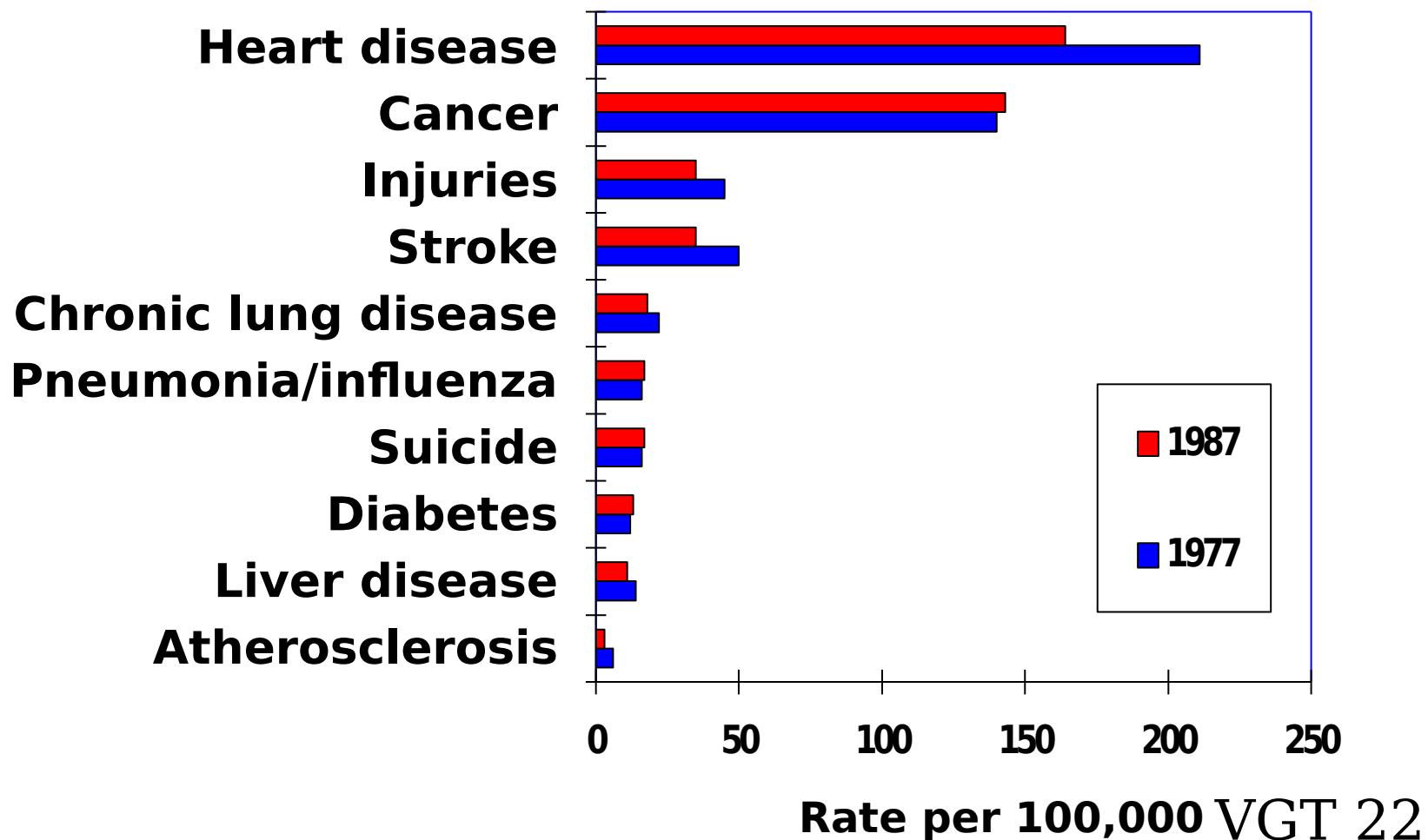
ELO E

ACTION: Identify the major forms of cardiovascular disease.

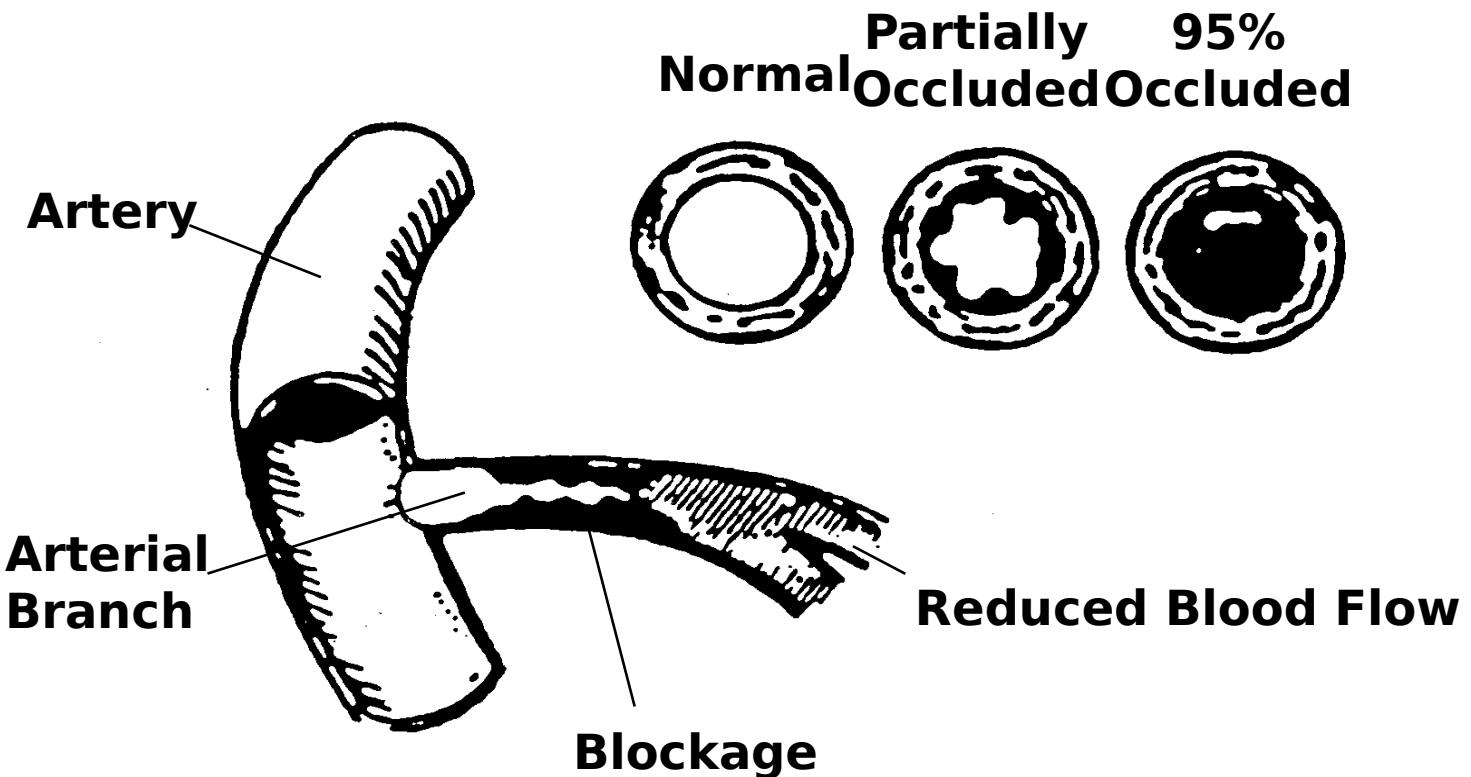
CONDITION: Given FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

STANDARD: Identify the major forms of cardiovascular disease IAW FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

Causes of Death



Effects of Atherosclerosis



Gradual narrowing of a Coronary Artery
through the progression of Atherosclerosis

The Injury Hypothesis

The atherosclerotic process is initiated by injury to the arterial wall. This process may be caused by the following risk factors:

- **Elevated Blood Cholesterol**
- **High Blood Pressure**
- **Cigarette Smoke**

ELO F

ACTION: Identify the risk factors of cardiovascular disease (CVD).

CONDITION: Given FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

STANDARD: Identify the risk factors of (CVD) IAW FM 21-20, AR 350-41 Chapter 9 and AR 600-9.

Risk Factors

Major Risk Factors That Can Be Changed

Cigarette Smoking
High Blood Pressure
Blood Cholesterol Levels
Physical Inactivity

Major Risk Factors That Cannot Be Changed

Heredity
Male Gender
Increasing age

Contributing Factors

Diabetes
Obesity
Stress

Hypertension

- A condition causing the blood to press too hard against the walls of your arteries.
- This increased pressure causes injury to the inside of the arterial walls (Injury Hypothesis).

Hypertension

Levels

Risk Classifications

Low Risk	Mild Risk	Moderate Risk	High Risk
120-135	135-159	160-199	>200
80-85	85-109	110-114	>115

Cholesterol

- **Used in all cell walls**
- **Used to manufacture bile**
- **Used to manufacture vitamin D**
- **Used to manufacture some hormones**

Total Cholesterol Risk Levels

Low Risk	< 160 mg/dl
Mild Risk	160 - 190 mg/dl
Moderate Risk	190 - 200 mg/dl
High Risk	> 200 mg/dl

Ratio of Total Cholesterol to HDL

Low

3.5

Mild

3.5-5.0

Hi

Average Cost of Smoking

- **On the average, 27% of Americans smoke. The number of teenage smokers has increased.**
- **Cost to society includes:**
 - increased health care
 - lost productivity
 - fire damage
 - lost lives

Smoking

- The Surgeon General - “Cigarette smoking is considered the most important of the known modifiable risk factors for coronary heart disease in the United States.”
- The risk and frequency of heart attacks are greater in persons who smoke and increase according to the number of cigarettes smoked. Smoking damages arterial walls!
- Compared with current smokers, the rate of heart attacks is lower among^{HT 33} those who have quit smoking.

Poisons

Cigarette smoke contains over 200 poisons which include:

- Benzene
- Carbon Dioxide
- Carbon Monoxide
- Hydrogen Cyanide
- Hydrocarbons
- Formaldehyde
- Lead
- Nicotine*
- Phenol

****Nicotine has an addictive potential similar to hard drugs such as crack cocaine! People need a program to help them quit and support to keep them from smoking again.***

Short/Long-term Effects

Short-term

- Heart rate & blood pressure rise
- Senses dull - smell & taste
- Bronchioles constrict
- Skin temperature decreases

Long-term

- Bronchitis
- Emphysema
- Cancer

Other Smoking Risks

- Blood is thickened
- Early wrinkles
- Impotence
- Decrease in vitamin C absorption
- Insulin resistance
- Decrease HDL

Smoking and the APFT

	<u>Smokers</u> (N = 1756)	<u>Non-Smokers</u> (N = 1530)
AGE	25.5 yrs	24.5 yrs
HT (cm)	175.0 cm	175.0 cm
WT (kg)	74.5 kg	75.2 kg
BF %	17.8 %	18.0 %
PU	36.8	40.2
SU	50.4	54.9
2-MR	15:35	14:43
		VGT 37

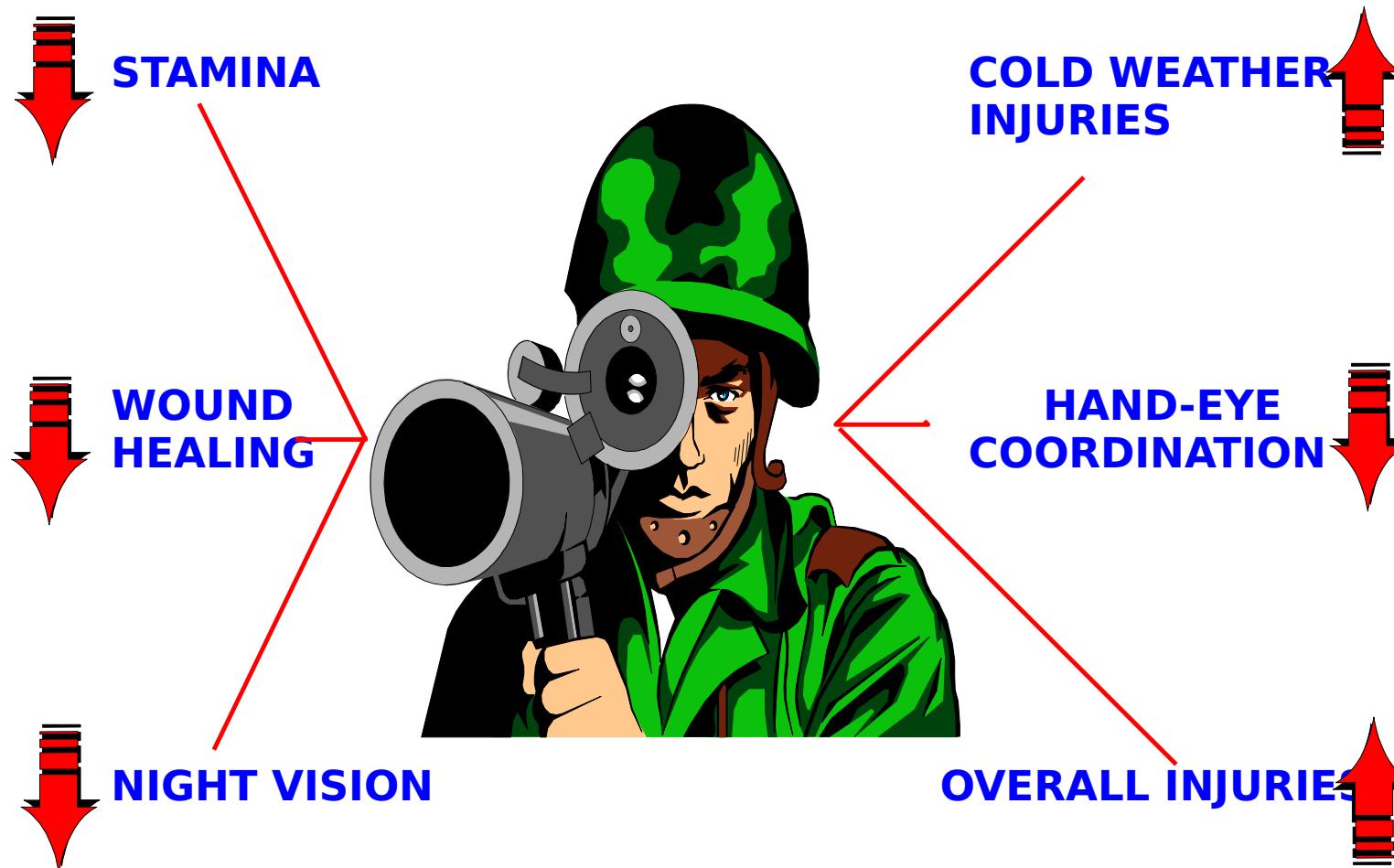
Smokeless Tobacco

- **Cancers**

- mouth
 - throat

- **Tooth Decay**
- **Gum Disease**

Adverse Impact of Tobacco on Soldier Readiness



Tobacco Cessation

Methods to

Stop

- Patches
- Acupuncture
- Aversion Therapy
- Hypnosis
- Pain Stimulus
- Nicorette

Sources of Help

- Health Promotion
- American Heart Association
- American Lung Association
- American Cancer Society
- Local Hospital

Inactivity

**Regular aerobic activity
increases
your exercise capacity and
plays a
role in the prevention of CVD.**

Contributing Risk Factors

- **Obesity**
- **Diabetes**
- **Stress**

Major Non-modifiable Risk

Factors

- **Heredity**
- **Gender**
- **Age**

Heart Attack Symptoms

- Pressure in the chest
- Heaviness
- Squeezing
- Discomfort
- Burning

CV Disease Risk Matrix

AGE	10 to 20	1	21 to 30	3	31 to 40	4	41 to 50	5	51 to 60	6	Over 61	6
HEREDITY	No known history of heart disease	1	1 relative over 60 with CV disease	2	2 relatives 60 with CV disease	3	1 relative under 60 with CV disease	4	2 relatives 60 with CV disease	6	3 relatives under 60 with CV disease	7
BODY COMP	Male: <15% Female: <21%	0	15.1 to 18 21.1 to 24	1	18.1 to 21 24.1 to 27	2	21.1 to 24 27.7 to 30	3	24.1 to 27 30.1 to 33	5	>27 >33	7
TOBACCO SMOKING	Non-smoker*	0	cigar and/or pipe	1	<10 cigarettes	2	20 cigarettes / day	4	30 cigarettes / day	6	40>a day	10
EXERCISE	Intense occupational and recreational exertion	1	Moderate occupational and recreational exertion	2	Sedentary work and intense recreational exertion	3	Sedentary work and moderate recreational exertion	5	Sedentary work and light recreational exertion	6	Complete lack of physical exertion	10
HDL RATIO or DIET FAT %	Ratio <3.5 or <25% fat	1	Ratio 3.6 to 4.5 or <30% fat	2	Ratio 4.6 to 5.5 or <35% fat	3	Ratio 5.6 to 6.5 or <40% fat	4	Ratio 6.6 to 7.5 or <45% fat	5	Ratio >7.6 or >45% fat	7
SYSTOLIC BLOOD PRESSURE	100 or less	1	101 - 120	2	121 - 140	3	141 - 160	4	161 - 179	6	>180	8
GENDER	Female <40	1	Female 40 - 60	2	Female >60	3	Male	5	Stocky Male	6	Bald Stocky Male	7

Exercise

Effects

- Reduces Blood Pressure
- Reduces Total Cholesterol
- Increases HDL
- Reduces Stress
- Reduces Obesity
- Reduces Dependence on Cigarettes
- Enhances Production of Insulin

ELO G

ACTION: Identify the 7-step planning process of unit program development.

CONDITION: Given FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

STANDARD: Identify the 7-step planning process of unit program development IAW FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

7-Step Planning

Process

STEP 1: Analyze the Mission

STEP 2: Develop Fitness Objectives

STEP 3: Assess the Unit

STEP 4: Determine Training Requirements

STEP 5: Develop Fitness Tasks

STEP 6: Develop a Training Schedule

STEP 7: Conduct and Evaluate Training

STEP 1: Analyze the Mission

- **Wartime mission**
- **Mission Essential Task List (METL)**
- **Commander's intent**
- **ARTEP/ MTP experience (JRTC and NTC)**
- **NCO experience**

STEP 2: Develop Fitness Objectives

- 1. Identify specific fitness tasks.**
- 2. Observable, measurable, quantifiable**
- 3. Realistic and performance oriented**

Fitness

Objectives

- 1. Meet unit foot march standards.**
- 2. Complete rope climb w/ BDU's , boots, Kevlar and helmet.**
- 3. Execute minimum of six pull ups.**
- 4. Run five miles.**
- 5. No APFT failures.**
- 6. No soldiers on weight control program.**
- 7. No more than 10% of company on profile.**

Develop Performance Measures

Light infantry company performance measures

1. Perform 52 push-ups, 62 sit-ups and 2-MR \leq 14:54.
2. Perform 6 pull-ups.
3. Carry equal size soldier 100 meters.
4. Lift 130 pounds to a height of 48-52 inches.
5. Road march 12 miles with 35 lbs. ALICE pack \leq 3 hours.

Develop Performance Measures

Medical company performance measures

1. Perform a 400-meter fireman's carry with an equal size soldier in less than 3 minutes.
2. Perform a timed 100-meter skedco pull with 135 lbs inside.
3. Perform a landing zone inverted Y shuttle.
4. Set up a GP medium \leq 15 minutes.

STEP 3: Assess the Unit

Utilizing performance measures:

1. Identify current fitness level.

2. Test standardized performance measures.

3. Identify unit strengths and weaknesses.

STEP 4: Determine Training Requirements

- 1. Commander's Intent**
- 2. Mission / METL**
- 3. APFT (secondary importance)**

STEP 5: Develop Fitness Tasks

- 1. Base fitness tasks on the mission and METL.**
- 2. Conduct realistic training (road march with a combat load for a realistic distance over terrain).**
- 3. Train all components of physical fitness and condition the entire body with a wide variety**

Battle-focused PT Worksheet

INDIVIDUAL TASK	REQUIRED PHYSICAL PERFORMANCE	PRIMARY WAY TO DEVELOP PERFORMANCE	SECONDARY BENEFITS	RESOURCES

STEP 6: Develop a Training Schedule

- 1. Review the training objectives.**
- 2. Determine training methods and frequency.**
- 3. Train all five components of physical fitness
and adhere to the seven principles of exercise.**

Develop an Event

List Sandbag Circuit
Aquatics
Strength Training Machine
Circuit

Calisthenic Circuit
Ability Group Run
Fartlek Run
Interval Run
Road March
Obstacle/Confidence Course
Cross-country Run
Rifle PT
Battle-focused PT Circuit

STEP 7: Conduct and Evaluate

Training

- 1. Execute battle-focused physical training.**
- 2. Re-evaluate performance at 6 and 10 weeks using standardized assessment techniques.**
- 3. Allow for continuous feedback.**

ELO H

ACTION: Discuss the 4 week training schedule using the 7 principles of exercise.

CONDITION: Given FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

STANDARD: Discuss the 4 week training schedule using the 7 principles of exercise IAW FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

**4 WEEK TRAINING SCHEDULE
MONTH #2**

SUN	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SAT
	A: Confidence Obstacle Course D: 90 Min I: 70-90% MHR/ TMF	A: Ability Group Run D: 2 miles I: 70% MHR	A: Push-up/Sit-up Improvement D: 45 Min I: TMF	A: Road March D: 2 hours I: 6 miles @ 20 min/mile w/ 30 lb ruck, weapon, LCE, softcap	A: Individual Movement Tech. Circuit D: 40 Min I: 80% MHR/ TMF	
	A: TOC Equip Circuit D: 50 Min I: TMF/80% MHR	A: Ability Group Run D: 3 Miles I: 75% MHR w/100 Push-ups and Sit-ups	A: Sandbag Circuit D: 60 Min I: TMF/70% MHR	A: Aquatic Calisthenics D: 45 Min I: 70-90% MHR	A: Weight Training for Performance D: 75 Min I: TMF	
	A: Ability Group Run D: 3 miles I: 75-80% MHR w/ 150 Push-ups and Sit-ups	A: Bayonet Assault Course D: 90 Min I: 80-90% MHR/ TMF BDU + Boots	A: 1000m Swim D: 45 Min I: 70-90% MHR	A: Litter Relays D: 60 Min I: 70-90% MHR/ TMF BDU + Boots	A: Cross Country Run D: 40 Min I: 70% MHR BDU w/ athletic footwear of choice	
	A: Log Drills D: 60 Min I: TMF (Anaerobic Power)	A: Interval Training D: 60 Min I: As per 2 Mile Run Breakdown 5 X 400m with Flexibility Improve. Training	A: Rifle Drills B: 60 Min I: TMF/70% MHR	A: Road March D: 105 min I: 6 miles @ 17.5 min/mile w/ 30lb ruck, weapon, LCE, softcap	A: Single Station Machine Circuit to Music D: 60 Min I: TMF/80% MHR	

SEVEN PRINCIPLES OF EXERCISE

- 1. PROGRESSION**
- 2. REGULARITY**
- 3. OVERLOAD**
- 4. VARIETY**
- 5. RECOVERY**
- 6. BALANCE**
- 7. SPECIFICITY**

JUSTIFICATION TOOLS

- 1. TECHNIQUES TO MANIPULATE TRAINING EFFECT**
- 2. BASED ON THE COMPONENTS OF FITNESS**
- 3. IAW PRINCIPLES OF EXERCISE**

PROGRESSION TOOLS

Cardiorespiratory (CR) Endurance:

Elevate THR duration

Increase

**Decrease min/mile
distance** **Increase**

Muscular Strength / Muscular Endurance (MSE):

Increase # sets **Increase # repetitions**

**Increase weight
resistance** **Increase**

Decrease rest interval

Flexibility (FLEX):

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REGULARITY TOOLS

CR: Train 3 x per week.

Split training effect with MSE on circuits.

MSE: Train 3 x per week.

Utilize circuits, aquatics, weight training and push-up/sit-up improvement.

FLEX: Train daily, performing stretching exercises before during and after each workout. Flex training during cool-down periods is a good method to enhance range of motion.

VARIETY TOOLS

CR: **Ability Group Run**

Intervals

Cross-country Run

Aquatics

Hill Sprints

Relays

MSE: **Sandbag Circuit**

Rifle Drills

Weight Training

Road

March **Rope Climbing**

FLEX: **Static** **Passive**

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PNF

RECOVERY TOOLS

CR: Alternate: CR and MSE days
Hard and Easy days
Long/Slow and Short/Fast
High Impact and Low Impact

MSE: Allow 48 hours rest between working the same muscle groups by alternating:

Total-body Workout and Rest
Upper and Lower-body Muscle

Groups

Push and Pull Muscle Groups

FLEX: Properly conducted flexibility improvement training may be performed

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BALANCE

Balance is based on incorporating all five tools components of fitness in your program.

**CR: Stairs Long slow distance
Interval training Cross-country**

runs

Aquatics

**MSE: Upper-body vs Lower-body
Push vs Pull muscle groups
Muscle balance-incline,decline and
flat bench press**

SPECIFICITY TOOLS

Train specifically to meet training requirements

Ruck runs

Road marching

Cross-country runs

Flak vest PT

Log drills

Rope climbs

Individual movement techniques

Litter relays

Buddy carries

Watercan PT

SUMMARY

- 1. Tools allow us to manipulate training effect.**
- 2. Train soldiers and keep them combat capable.**
- 3. Provide variety in unit PT program.**

**4 WEEK TRAINING SCHEDULE
MONTH #2**

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	A: Log Drills D: 60 Min I: TMF (Anaerobic Power)	A: Interval Training D: 60 Min I: As per 2 Mile Run Breakdown 5 X 400m with Flexibility Improve. Training	A: Rifle Drills B: 60 Min I: TMF/70% MHR	A: Road March D: 105 min I: 6 miles @ 17.5 min/mile w/ 30lb ruck, weapon, LCE, softcap	A: Single Station Machine Circuit to Music D: 60 Min I: TMF/80% MHR	

MSE OVERLOAD EXAMPLE

During Week 2, MSE Overload is achieved through the TOC equipment circuit, sandbag circuit, and weight training session.

Each training session is conducted to temporary muscle failure.

Training time is never less than 50 minutes.

Type of exercise is varied.

CR PROGRESSION EXAMPLE

During the four week training period, ability group runs progress from 2 miles at 70% MHR in week one, to 3 miles at 75% MHR during week two, to 3 miles at 75-80% MHR in week three. Overload is based on the objective of the training session.

FLEXIBILITY BALANC

Balance is achieved by incorporating all three stretching techniques (static, passive, PNF) and by stretching all muscle groups.

For example, week four interval training involves flexibility improvement. Balanced lower-body stretching on this day will incorporate hip flexor and gluteus maximus, VGT 75 quadriceps and hamstrings.

GENERAL RULES

- **Don't progress more than 5-10% per week for MSE.**
- **Don't progress more than 10% per week for FMS.**
- **Every day is a recovery day.**
- **Include combined training events (CR and FMS).**
- **CR is not limited to just running.**

ELO I

ACTION: Describe training programs for soldiers in identified special populations.

CONDITION: Given FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

STANDARD: Describe training programs for soldiers in identified special populations IAW FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

SPECIAL POPULATIONS

- **Medical Profile**
 - **Injury**
 - **Pregnancy**
- **Overweight**
- **APFT Failure**
- **New Soldier**

GENERAL RULES

- 1. You are not a doctor.**
- 2. Do not cause further injury.**
- 3. Do not make PT punitive.**
- 4. Train with your unit when possible**

PROFILE PT*

- 1. CR: low impact - stationary cycle, walking, rowing machine and aquatics.**
- 2. MS: sympathetic stimulation and use of strength training machines.**
- 3. ME: aquatics, surgical tubing, calisthenics and conditioning drills.**
- 4. FLEX: static, passive and PNF techniques.**
- 5. BC: calculate caloric intake vs expenditure.**

*** Remember rules #1 and #2**

OVERWEIGHT

1. Education on caloric intake vs expenditure

- Diet and exercise**

2. Long slow duration and low impact activities

- Prevent overuse injuries**

3. MSE/FLEX

- Overweight soldiers should not be limited in these areas. Ensure proper progression.**

APFT FAILURE*

- 1. Progression:** Do not exceed 10% per week for CR and MSE training.
- 2. Balance:** Ensure all muscle groups are trained.
- 3. Recovery:** This is often violated when additional training is conducted. Utilize low impact activities such as aquatics, stationary cycle and strength training machines. These activities will provide variety, as opposed to just push-ups, sit-ups and running.

*** Pay attention to rules 2, 3, and 4.**

NEW SOLDIER

- 1. Who is a new soldier?**
- 2. Make the new soldier mission capable.**
- 3. Progression is the key: Train motion, form, and muscle memory. Gradually increase intensity over a period of weeks.**
- 4. Exercise prescription during new soldier PT**

PREGNANCY

- 1. Rule #1: You are not a doctor.**
- 2. Reference FM 21-20, Appendix A (Physiological Differences).**
- 3. Develop and implement a post-wide pregnancy PT program.**
- 4. Activities should include: low impact exercise, strength training machines and flexibility training. Do not regulate the pregnant soldier's diet.**
- 5. Always work within the physician's guidelines.**

SPECIAL POPULATIONS

1. You are not a doctor.
2. Do not cause further injury.
3. Do not make pt punitive.
4. Train with your unit when possible.

* *It is the MFT's responsibility to develop training programs for special populations that are IAW with the four rules listed above and the seven principles of exercise.*